

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

O I P E JC 135 In re Application Of: )  
JUL 03 2001 Dennis Charles CLEMES et al. ) Group Art Unit: Not Yet Known *TC 1700*  
PATENT & TRADEMARK OFFICE )  
Application Number: 09/848,255 ) Examiner: Not Yet Known *D. B.*  
Filed: May 4, 2001 )  
For: SULPHUR DIOXIDE GENERATOR )  
RECEIVED  
JUL 10 2001  
TC 1700

CLAIM FOR PRIORITY UNDER 35 U.S.C. §§ 119 AND 120 AND  
SUBMISSION OF CERTIFIED COPY OF PRIORITY DOCUMENT

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Applicants are enclosing a certified copy of **South African Patent Application No. 2000/5535** which was filed in South Africa on October 10, 2000. This document provides the basis for Applicants' claim for priority, which claim was made upon the filing of the above-captioned patent application in the U.S. Patent and Trademark Office on May 4, 2001.

No fee is believed necessary with this submission. However, should the U.S. Patent and Trademark Office determine that additional fees are due upon the filing of this priority document, please charge any such fees to the undersigned's Deposit Account No. 50-1640.

Respectfully submitted,

BROBECK, PHLEGER & HARRISON LLP

By:

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# Sertifikaat

PATENTKANTOOR

DEPARTEMENT VAN HANDEL  
EN NYWERHEID

REPUBLIEK VAN SUID-AFRIKA



REPUBLIC OF SOUTH AFRICA

# Certificate

PATENT OFFICE

DEPARTMENT OF TRADE  
AND INDUSTRY

Hiermee word gesertifiseer dat  
This is to certify that

the attached document is a true copy of the  
Provisional Specification forming part of a patent  
application in the name of GRAPETEK  
(PROPRIETARY) LIMITED filed at the South  
African Patent Office under No 2000/5535 dated  
10 October 2000.

Getekен te PRETORIA in die Republiek van Suid-Afrika, hierdie  
Signed at PRETORIA in the Republic of South Africa, this

08

dag van *17/1/2001*  
day of

*S. J. Meyer*

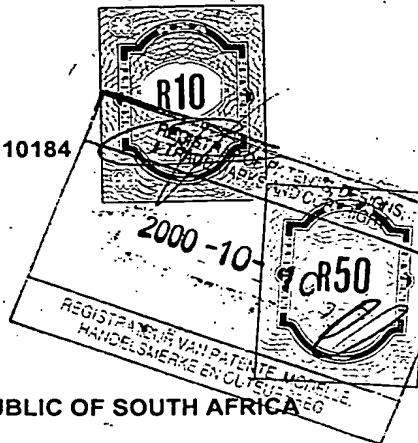
Registrateur van Patente  
Registrar of Patents

THE GRANT OF A PATENT IS HEREBY REQUESTED BY THE UNDERMENTIONED APPLICANT  
ON THE BASIS OF THE PRESENT APPLICATION FILED IN DUPLICATE

21 01 OFFICIAL APPLICATION NO

20005535

BB REF: 10184



71 FULL NAME(S) OF APPLICANT(S)

GRAPETEK (PROPRIETARY) LIMITED

ADDRESS(ES) OF APPLICANT(S)

UNIT 3, 129 INDUSTRIAL PARK, KINGHALL AVENUE, EPPING INDUSTRIA 2, 7475, REPUBLIC OF SOUTH AFRICA

54 TITLE OF INVENTION

SULPHUR DIOXIDE GENERATOR

THE APPLICANT CLAIMS PRIORITY AS SET OUT ON THE ACCOMPANYING FORM P.2.  
(COUNTRY) (DATE) (NO.)

21 01 THE APPLICATION IS FOR A PATENT OF ADDITION TO PATENT APPLICATION NO

21 01 THIS APPLICATION IS A FRESH APPLICATION IN TERMS OF SECTION 37 AND BASED ON APPLICATION NO

THIS APPLICATION IS ACCCOMPANIED BY:

1. A single copy of a provisional or two copies of a complete specification of 7 pages

2. Drawings of 1 sheets

3. Publication particulars and abstract (Form P.8 in duplicate).

4. A copy of Figure of the drawings (if any) for the abstract.

5. An assignment of invention

6. Certified priority document(s). (State number)

7. Translation of the priority document(s)

8. An assignment of priority rights

9. A copy of Form P.2 and the specification of RSA Patent Application No

10. Form P.2 in duplicate

11. A declaration and power of attorney on Form P.3

12. Request for ante-dating on Form P.4

13. Request for classification on Form P.9

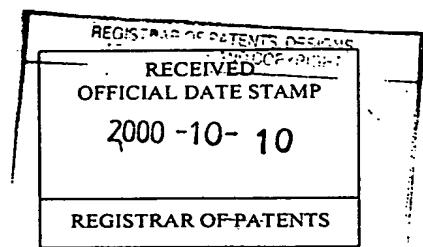
14.

74 ADDRESS FOR SERVICE: Brian Bacon & Associates  
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Cape Town Western Cape

DATED THIS 10<sup>th</sup> DAY OF October 2000

BRIAN BACON & ASSOCIATES  
APPLICANTS PATENT ATTORNEYS

The duplicate will be returned to the applicant's address for service as  
proof of lodging but is not valid unless endorsed with official stamp



REPUBLIC OF SOUTH AFRICA

PATENTS ACT, 1978

## REGISTER OF PATENTS

OFFICIAL APPLICATION NO.:		LODGING DATE: PROVISIONAL		ACCEPTANCE DATE	
22	01	22	2000-10-10		
INTERNATIONAL CLASSIFICATION		LODGING DATE: COMPLETE		GRANT DATE	
51		23		47	
FULL NAME(S) OF APPLICANT(S) / PATENTEE(S)					
71	GRAPETEK (PROPRIETARY) LIMITED				
APPLICANTS SUBSTITUTED		DATE REGISTERED			
71					
ASSIGNEE(S)		DATE REGISTERED			
71					
FULL NAME(S) OF INVENTOR(S)					
72	1) DENNIS CHARLES CLEMES 2) PETRUS JOHANNES VAN DER WESTHUIZEN 3) PIETER JOHANNES VAN DER MERWE				
PRIORITY CLAIMED		COUNTRY		NUMBER	
		33	—	31	—
32		—			
TITLE OF INVENTION					
54	SULPHUR DIOXIDE GENERATOR				
ADDRESS(ES) OF APPLICANT(S) / PATENTEE(S)					
UNIT 3, 129 INDUSTRIAL PARK, KINGHALL AVENUE, EPPING INDUSTRIA 2, 7475, REPUBLIC OF SOUTH AFRICA					
ADDRESS FOR SERVICE		Brian Bacon & Associates 2 <sup>nd</sup> Floor Mariendahl House Norwich on Main Newlands 7700 Cape Town Western Cape			BB REF. 10184
PATENT OF ADDITION TO NO.		DATE OF ANY CHANGE			
61					
FRESH APPLICATION BASED ON		DATE OF ANY CHANGE			

**DECLARATION AND POWER OF ATTORNEY**

(Section 30 – Regulation 8, 22(i)(c) and 33)

PATENT APPLICATION NO		
21	01	20005535

BB REF:10184

LODGING DATE	
22	2000-10-10

FULL NAME(S) OF APPLICANT(S)	
71	GRAPETEK (PROPRIETARY) LIMITED

FULL NAME(S) OF INVENTOR(S)	
72	1) DENNIS CHARLES CLEMES 2) PETRUS JOHANNES VAN DER WESTHUIZEN 3) PIETER JOHANNES VAN DER MERWE

PRIORITY CLAIMED	COUNTRY	NUMBER	DATE
	33	31	32

NOTE: The country must be indicated by its International Abbreviation – see schedule 4 of the Regulations

TITLE OF INVENTION	
54	SULPHUR DIOXIDE GENERATOR

I/We PETRUS JOHANNES VAN DER WESTHUIZEN

hereby declare that:-

- \* 1. I/We am/are the applicant(s) mentioned above;
- \*\* 2. I/We have been authorised by the applicant(s) to make this declaration and have knowledge of the facts herein stated in the capacity of MANAGING DIRECTOR of the applicant(s);
- \*\*\* 3. the inventors(s) of the abovementioned invention is/are the person(s) named above and the applicant(s) has/have acquired the right to apply by virtue of an assignment from the inventor(s);
- 4. to the best of my/our knowledge and belief, if a patent is granted on the application, there will be no lawful ground for the revocation of the patent;
- \*\*\*\* 5. this is a convention application and the earliest application from which priority is claimed as set out above is the first application in a convention country in respect of the invention claimed in any of the claims; and
- 6. the partners and qualified staff of the firm BRIAN BACON & ASSOCIATES, patent attorneys, are authorised, jointly and severally, with powers of substitution and revocation, to represent the applicant(s) in this application and to be the address of service of the applicant(s) while the application is pending and after a patent has been granted on the application.

SIGNED THIS 26<sup>th</sup> DAY OF SEPTEMBER 2000



(no legalization necessary)

- \* In the case of application in the name of a company, partnership or firm, give full names of signatory/signatories, delete paragraph 1, and enter the capacity of each signatory in paragraph 2.
- \*\* If the applicant is a natural person, delete paragraph 2.
- \*\*\* If the right to apply is not by virtue of an assignment from the inventor(s), delete "an assignment from the inventor(s)" and give details of acquisition of right.
- \*\*\*\* For non-convention applications, delete paragraph 5.

**ASSIGNMENT OF INVENTION**  
**CONFIRMATION OF ASSIGNMENT OF INVENTION**

As a below named inventor I hereby confirm that the below named assignee has:

1. Agreed to acquire all right, title and interest in the invention, details of which are set out below, and I hereby assign to the assignee for good and valuable consideration all my right, title and interest in the said invention.

OR

2. Has acquired all right, title and interest to the said invention by virtue of a prior assignment or by operation of law or by virtue of an employment contract or relationship, and I hereby confirm that all right, title and interest in and to the said invention vests in the assignee.

The rights assigned include the right to file patent applications in its name in any country or regional grouping or through any International Treaty that it may choose.

I undertake if called upon by the assignee, its successors, or assigns to sign all application, assignment or other documents to enable patent applications to be filed in South Africa and other countries in respect of the invention.

I hereby irrevocably grant to the assignee, its successors or assigns, Power of Attorney with power of substitution and revocation to act on my behalf, as if personally acting in the execution of such application, assignment or other documents. The law governing this confirmation of assignment and the Power of Attorney incorporated therein, shall be the law of the Republic of South Africa.

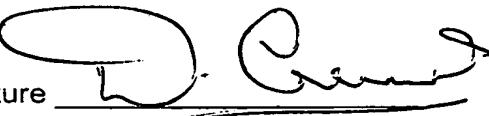
DATED this      day of      2000

Details of Invention Title: SULPHUR DIOXIDE GENERATOR

Inventor

Name: Dennis Charles CLEMES

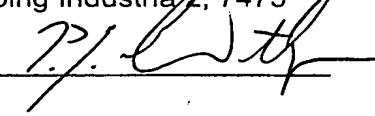
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Inventor

Name: Petrus Johannes VAN DER WESTHUIZEN

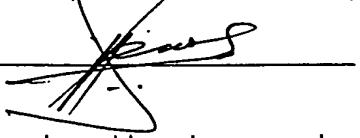
Address: Unit 3, 129 Industrial Park, Kinghall Avenue, Epping Industria 2, 7475

Signature 

Inventor

Name: Pieter Johannes VAN DER MERWE

Address: Unit 3, 129 Industrial Park, Kinghall Avenue, Epping Industria 2, 7475

Signature 

The rights assigned herein, or assigned prior to the date of execution of this document and the assignment of which rights is confirmed herein, are hereby accepted by the assignee.

Assignee

Name: GRAPETEK (PROPRIETARY) LIMITED

BRIAN BACON & ASSOCIATES  
PATENT ATTORNEYS  
CAPE TOWN

REPUBLIC OF SOUTH AFRICA  
Patents Act, 1978

**PROVISIONAL SPECIFICATION**  
(Section 30 (1) – Regulation 27)

21	01	OFFICIAL APPLICATION NO
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22	LODGING DATE
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2000 -10- 10

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71	FULL NAME(S) OF APPLICANT(S)
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GRAPETEK (PROPRIETARY) LIMITED

72	FULL NAME(S) OF INVENTOR(S)
----	-----------------------------

- 1) DENNIS CHARLES CLEMES
- 2) PETRUS JOHANNES VAN DER WESTHUIZEN
- 3) PIETER JOHANNES VAN DER MERWE

54	TITLE OF INVENTION
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SULPHUR DIOXIDE GENERATOR

FIELD OF THE INVENTION

THIS INVENTION relates to sulphur dioxide generators.

BACKGROUND TO THE INVENTION

Sulphur dioxide generators are placed in cartons containing table grapes, 5 the gaseous sulphur dioxide in the carton preventing the growth on the grapes of certain forms of fungi. Where the grapes are to be shipped over long distances it is conventional to use two stage generators. These generate sulphur dioxide relatively rapidly when first placed in the carton. The fast rate of release lasts for a few days and thereafter sulphur dioxide is released at a much slower rate over a period of several 10 weeks.

Various forms of two stage generator are available commercially. The following three types are known to Applicant:-

Type 1. This generator is in two parts. The first part consists of a sheet of a material such as Kraft paper which is pervious to water vapour and 15 sulphur dioxide gas. One face of the sheet has thereon a coating comprising a binder which has dispersed therein a substance, or mixture of substances, which generates sulphur dioxide in the presence of water.

The second part comprises two sheets of Kraft paper secured together along a pattern of intersecting lines. The lines and the sheets bound a plurality of pockets. Each pocket has therein, in powder form, the substance(s) which when exposed to water vapour generates sulphur dioxide. The sheets are pervious to both water vapour and sulphur dioxide gas.

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Type 2. This comprises three sheets of material. One sheet is of paper, such as Kraft paper, and the other two are of what is called poly coated paper. The coating is of polyethylene. The paper sheet is one of the outside sheets. The poly coatings face away from one another, and all three sheets are secured together along a pattern of intersecting lines. This forms a series of pockets on each side of the centre sheet, each pocket being bounded by said lines and by two of the sheets. All the pockets contain sulphur dioxide generating substance(s). The paper sheet is more readily penetrated by water vapour than the poly coated sheets. Hence moisture reaches the pockets between the paper sheet and one poly coated sheet before it reaches the pockets between the two poly coated sheets.

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Type 3. This generator also comprises three sheets of material, two of them being poly coated and secured together along lines which bound a series of

pockets with sulphur dioxide generating substances therein. To this extent the type 3 generator is similar to type 2. However, the third sheet, which is a paper sheet, is laminated to the face of one of the poly coated sheets by a laminating adhesive which has sulphur dioxide generating substance dispersed in it. Water vapour penetrates the paper sheet and reaches the laminating adhesive and the generating substance dispersed in the laminating adhesive, before it penetrates the poly coated sheets and reaches the pockets between the poly coated sheets.

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Type 4. This generator comprises two thin plastic films laminated together using a wax which has sulphur dioxide generating material dispersed therein. The outer face of one of the films carries a coating of sulphur dioxide

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This generator comprises two thin plastic films laminated together using a wax which has sulphur dioxide generating material dispersed therein. The outer face of one of the films carries a coating of sulphur dioxide generating material. The coating is covered by a sheet of non-woven material. The coating provides first stage generation and the generating material between the films second stage generation.

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The present invention seeks to provide an improved form of two stage sulphur dioxide generator.

## BRIEF DESCRIPTION OF THE INVENTION

According to the present invention there is provided a sulphur dioxide generator comprising a first composite sheet comprising a paper substrate with a

coating of weldable synthetic plastics material on one face thereof, a second composite sheet comprising a paper substrate with a first coating of a substance which, in the presence of moisture generates sulphur dioxide and a second coating of a weldable synthetic plastics material thereon, the first coating being between the paper substrate and the second coating, the weldable coatings being secured to one another in such manner as to provide a series of closed pockets between the composite sheets, each pocket having said substance in powder form therein.

#### BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the present invention, and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawings in which:-

Figure 1 is a top plan view of a two stage sulphur dioxide generator in accordance with the present invention, layers of the generator being broken away to show the construction; and

Figure 2 is a section on the line II-II of Figure 1, Figure 2 being drawn to an exaggerated scale.

#### DETAILED DESCRIPTION OF THE DRAWINGS

The two stage generator 10 illustrated in the drawings comprises a composite top sheet 12 and a composite bottom sheet 14. The top sheet consists of a

paper sheet 16 which has a polyethylene coating 18 on the under surface thereof.

The bottom composite sheet 14 comprises a paper sheet 22 which has two coatings on the top face thereof, the top coating being designated 24 and being of polyethylene and the coating 26 which is between the sheet 22 and the coating 24 being of a substance which, in the presence of moisture, generates sulphur dioxide.

The substance can be sodium metabisulphite, an acidic mixture comprising sodium sulphite and fumaric acid, an acidic mixture comprising sodium sulphite and potassium bitartrate or a mixture of both these acidic mixtures. Coating can be carried out in conventional coating apparatus, the coating 26 being applied before the coating 24.

10 The composite top sheet 12 and the composite bottom sheet 14 are welded to one another along a series of longitudinal and transverse lines 28. This is achieved by feeding the top composite sheet and the bottom composite sheet between two heated rollers one of which has a pattern of axially extending bars and circumferentially extending rings.

15 Before the top composite sheet is fed onto the bottom composite sheet and the sheets are heat sealed together, a small amount of gas generating substance in powder form is fed onto the bottom composite sheet. The places where the powder lies are not welded together and thus, once the sheets are joined, lie in the pockets designated 30 each of which is bounded by four of the lines 28 and by the top and

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-7-

bottom composite sheets 12 and 14.

Dated this 10<sup>th</sup> day of October 2000

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Brian Bacon & Associates  
Applicant's Patent Attorney

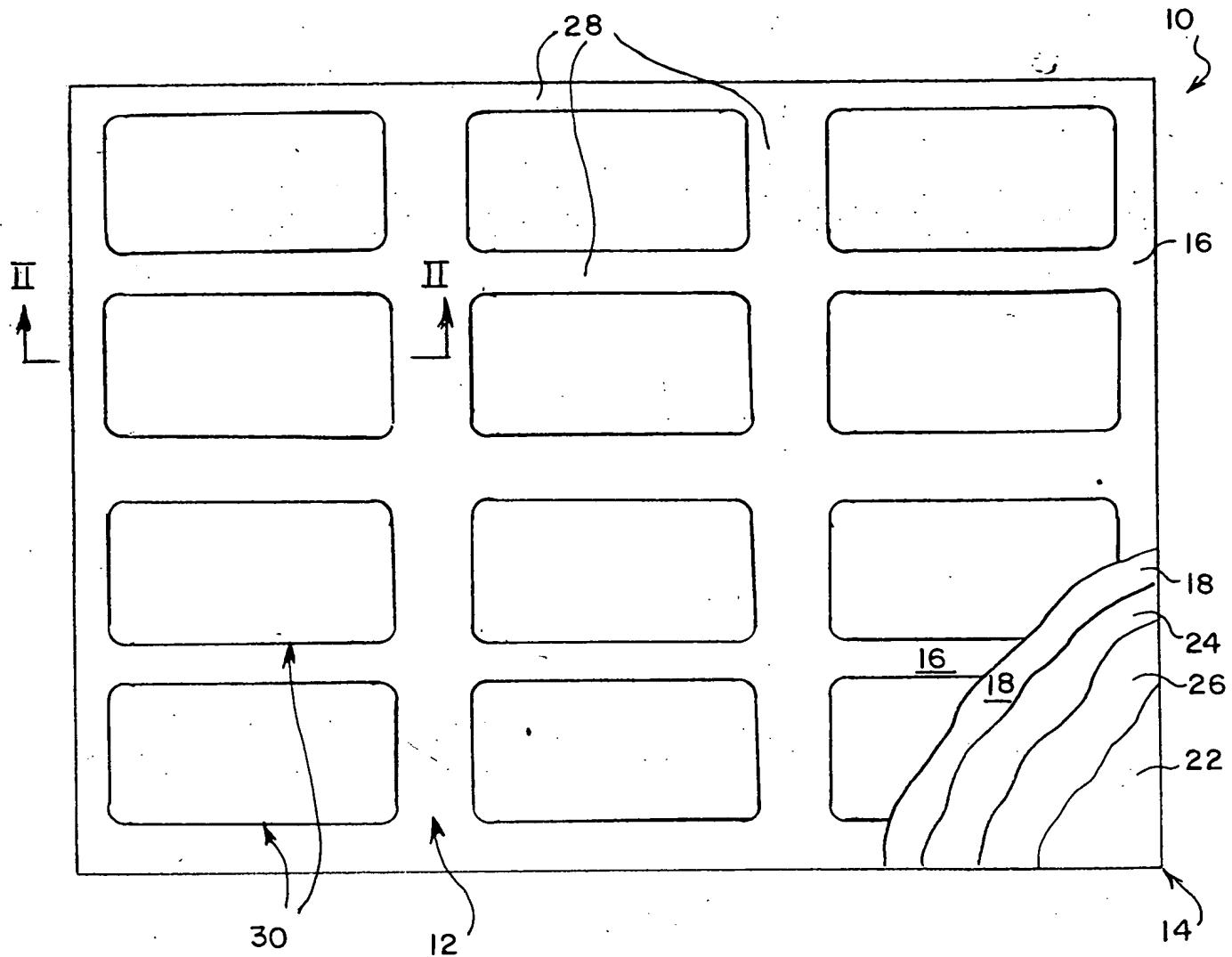


FIG. 1

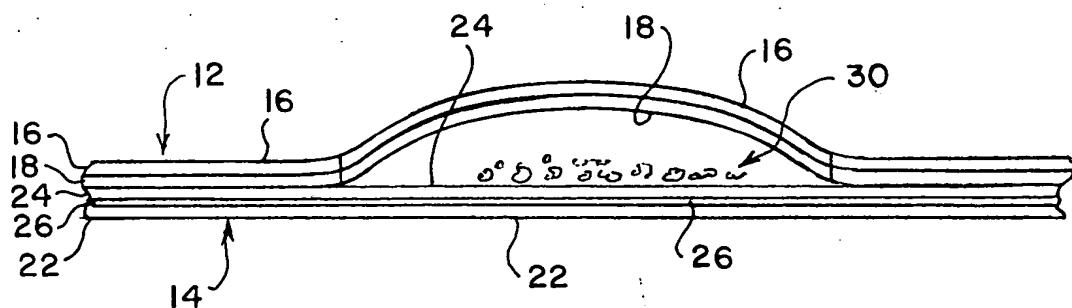


FIG. 2